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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,472	08/30/2001	James J. Howarth	4348US (MUEI-0547.00/US)	1559
24247	7590	09/09/2004	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			DIAZ, JOSE R	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,472

Applicant(s)

HOWARTH, JAMES J.

OK

Examiner

José R. Díaz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,6-11,13,20-24,27,30-33,35,36 and 43-46 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 20-23 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24,27,30-32,35,36,43 and 44 is/are allowed.
- 6) ☒ Claim(s) 1,4,6-8 and 11 is/are rejected.
- 7) ☒ Claim(s) 10,13,33,45 and 46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/15/04 & 3/22/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claim 24 is generic and allowable. Accordingly, claims 32 and 43-46 are no longer withdrawn from consideration since the claims depend from or otherwise include each of the limitations of an allowed generic claim. However, claims 9 and 20-23 remain withdrawn from consideration since they do not all depend upon or otherwise include all the limitations of an allowed generic claim as required by 37 CFR 1.141.

Claim Objections

2. Claims 13, 33, 45 and 46 are objected to because of the following informalities: Please correct the dependency of each claim. Please note claims 13 depends on the now cancelled claim 12, claim 33 depends on the now cancelled claim 29, and claims 45 and 46 depend on the now cancelled claim 25. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 8 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Acciai et al. (US Pat. No. 5,987,742).

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Regarding claim 1, Acciai et al. teaches a method for aligning a semiconductor device package with a carrier substrate for electrical interconnection therebetween, the method comprising:

forming at least two channels (consider the holes containing the pins 13 and 14) through the semiconductor device package (10) from a first major surface thereof to a second, opposing major surface thereof (see fig. 1);

providing a major surface of the carrier substrate (consider portions 18-21 as a single carrier substrate) with at least two alignment features including forming at least two holes in the carrier substrate (consider the holes provided in portions 18 and 19 as shown in fig. 2), each of which are spaced and positioned in respective correspondence to one of the at least two channels (see fig. 2);

engaging the at least two channels formed in the semiconductor package (10) with at least two pins (13 and 14) carried by a head of pick and place device (15) (see fig. 1 and col. 2, lines 41-45) and grasping the semiconductor package with the pick and place device (see col. 2, lines 41-45);

positioning the pick and place device (15) and the semiconductor device package (10) over the carrier substrate (consider portions 18-21 as a single carrier substrate) with the first major surface of the semiconductor package (10) facing the major surface of the carrier substrate (see fig. 2);

aligning the at least two pins (13 and 14) with the at least two alignment features of the carrier substrate (see consider the holes provided in portions 18 and 19 in figure 2); and

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placing the at least two pins (13 and 14) through the at least two channels (see fig. 1) and into the at least two holes (see fig. 2).

Regarding claim 4, Acciai et al. teaches that the two holes in the carrier substrate include forming at least two blind holes therein (See fig. 2. Please note that the holes provided in portions 18 and 19 of the carrier substrate are not through-holes).

Regarding claim 8, Acciai et al. teaches affixing the at least two pins (13 and 14) to both the semiconductor device package and to the carrier substrate (see fig. 2).

Regarding claim 11, Acciai et al. further teaches removing the at least two pins (13 and 14) subsequent to the alignment of the at least two channels with the at least two alignment features (see fig. 3).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acciai et al. (US Pat. No. 5,987,742) in view of Scanlan et al. (US Pat. No. 5,690,504).

Regarding claims 6 and 7, Acciai et al. fails to teach forming the pins of a non-conductive material or an anti-static material. Scanlan et al. teaches that it is well known in the art to form guide pins of either plastic or glass reinforced nylon (see col. 3, lines 13-15).

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Acciai et al. and Scanlan et al. are analogous art because they are from the same field of endeavor as applicant's invention. At the time of the invention it would have been obvious to a person of ordinary skill in the art to form the pins of a plastic material. The motivation for doing so, as is taught by Scanlan et al., is reducing manufacturing cost (col. 3, lines 15-17). Therefore, it would have been obvious to combine Scanlan et al. with Acciai et al. to obtain the invention of claims 6 and 7.

Allowable Subject Matter

7. Claims 24, 27, 30-32, 35-36 and 43-44 are allowed.
8. Claims 10 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. Claims 33, 45 and 46 would be allowable if rewritten to overcome the objections, set forth in this Office action.
10. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach, disclose, or suggest, either alone or in combination, a method of testing a semiconductor package comprising the steps of:

aligning each channel of the at least two channels formed in the semiconductor device package with a corresponding alignment feature of the at least two alignment features of the carrier substrate including placing pins formed of a non-conductive material through the at least two channels and into the at least two holes;

electrically contacting each discrete conductive element of the semiconductor package with a terminal pad of the carrier substrate;

passing at least one electrical signal between the semiconductor device package and the carrier substrate; and

removing the pins subsequent to the alignment of each of the at least two channels with a corresponding alignment feature of the at least two alignment features.

Response to Arguments

11. Applicant's arguments with respect to claims 1, 4, 6-8 and 11 have been considered but are moot in view of the new grounds of rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wataya et al. (US Pat. No. 6,693,674 B1) discloses a chip 1 having alignment features (6 and 7), a printed circuit board (11) with alignment features (12) and a carrier substrate (15) with pins (16 and 17) (see figs. 1 and 4); Masuo et al. (US Pat. No. 6,384,360 B1) discloses an IC pickup, carrier and testing apparatus (see fig. 3); Marshall et al. a tool for mounting a connector to a printed circuit board (see fig. 2A); Fukasawa et al. (US Pat. No. 6,333,638 B1) discloses a test apparatus comprising guide pins (see fig. 66 and abstract); and Bright (US Pat. No. 4,744,140) discloses a tool having pins (14 and 16) for mounting connectors (22) having alignment features (26 and 28) onto a printed circuit board (24) (see fig. 1).

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13. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Correspondence

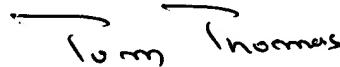
Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R. Díaz whose telephone number is (571) 272-1727. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRD
9/6/04

A handwritten signature in black ink that reads "Tom Thomas". The signature is written in a cursive style with a horizontal line above the first name.

TOM THOMAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800